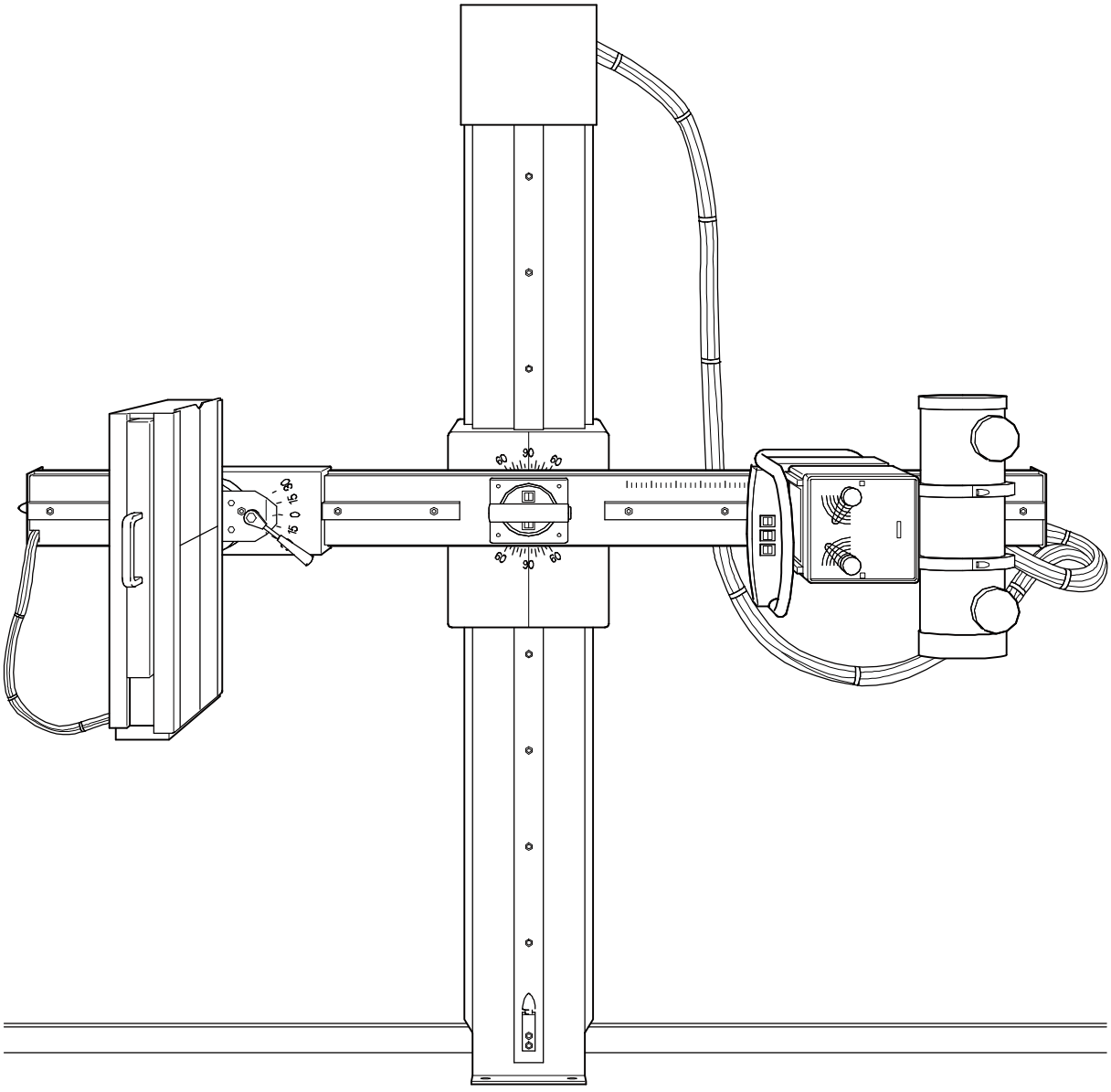
MOUNTING INSTRUCTIONS COSMOS-2



CE 0125

English Edition

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1. Specifications

1.1. General Safety Notes

In the Federal Republic of Germany, the electrical installation of rooms used for medical purposes must conform to the provisions of VDE Standard 0107. Consult installation lay-out plan. During installation it is important that all protective ground wire connections provided by the manufacturer properly made before the equipment is started up. The protective ground wires between the individual system components and the power supply are connected as shown in the wiring diagram. Regulations of professional associations concerning safety and accident prevention must be observed. No work may be performed on parts carrying a voltage higher than 42V (Peak Voltage). If it is necessary to turn on the power for execution of movements of the equipment in the mode of installation procedure, it must be shut down immediately after completion of these movements.

1.2 Weight of Components

Basic unit (column with swivel arm)	approx. 190kg
Counterweight carriage with weight plates	approx. 200kg
Bucky support, cover plate and accessories	approx. 25kg

1.3 Dimensions

Basic unit	920 x 330 x 2125 mm
Counter weight carriage	200 x 240 x 900 mm
Bucky support	100 x 640 x 580 mm
Cover plate	30 x 610 x 640 mm

1.4 Shipping Weight and Dimensions

Basic unit	1110 x 560 x 2340 mm	approx. 325 kg
Counter weight	360 x 320 x 1150 mm	approx. 230 kg

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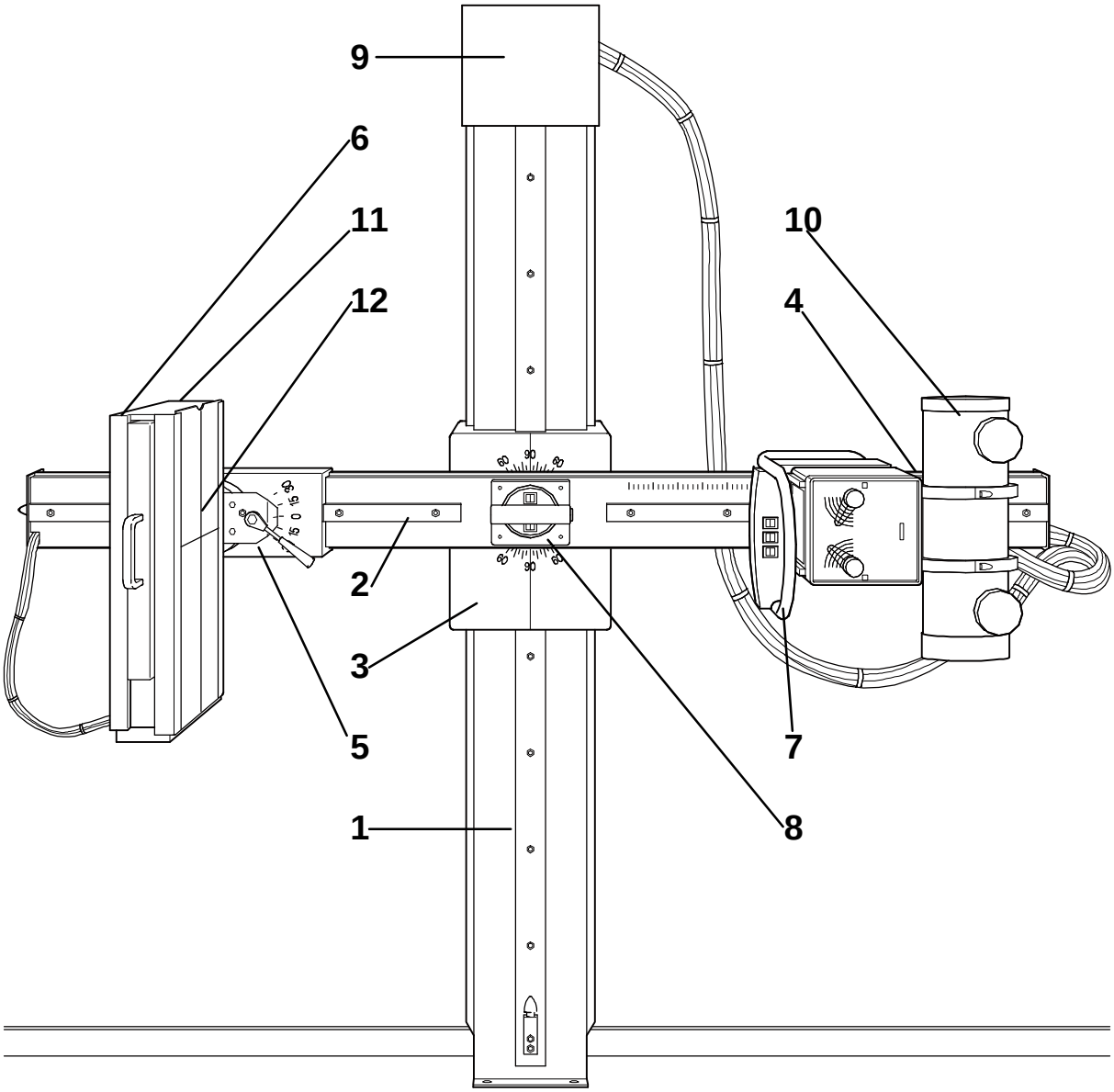
1.5. Component Designations



1 Column stand
2 Swivel arm
3 Vertical carriage
4 Tube carriage
5 Bucky carriage
6 Bucky support
7 Main control handle
8 Cental control grip
9 Top cover
10 X-ray tube and collimator
11 Bucky
12 Cover plate

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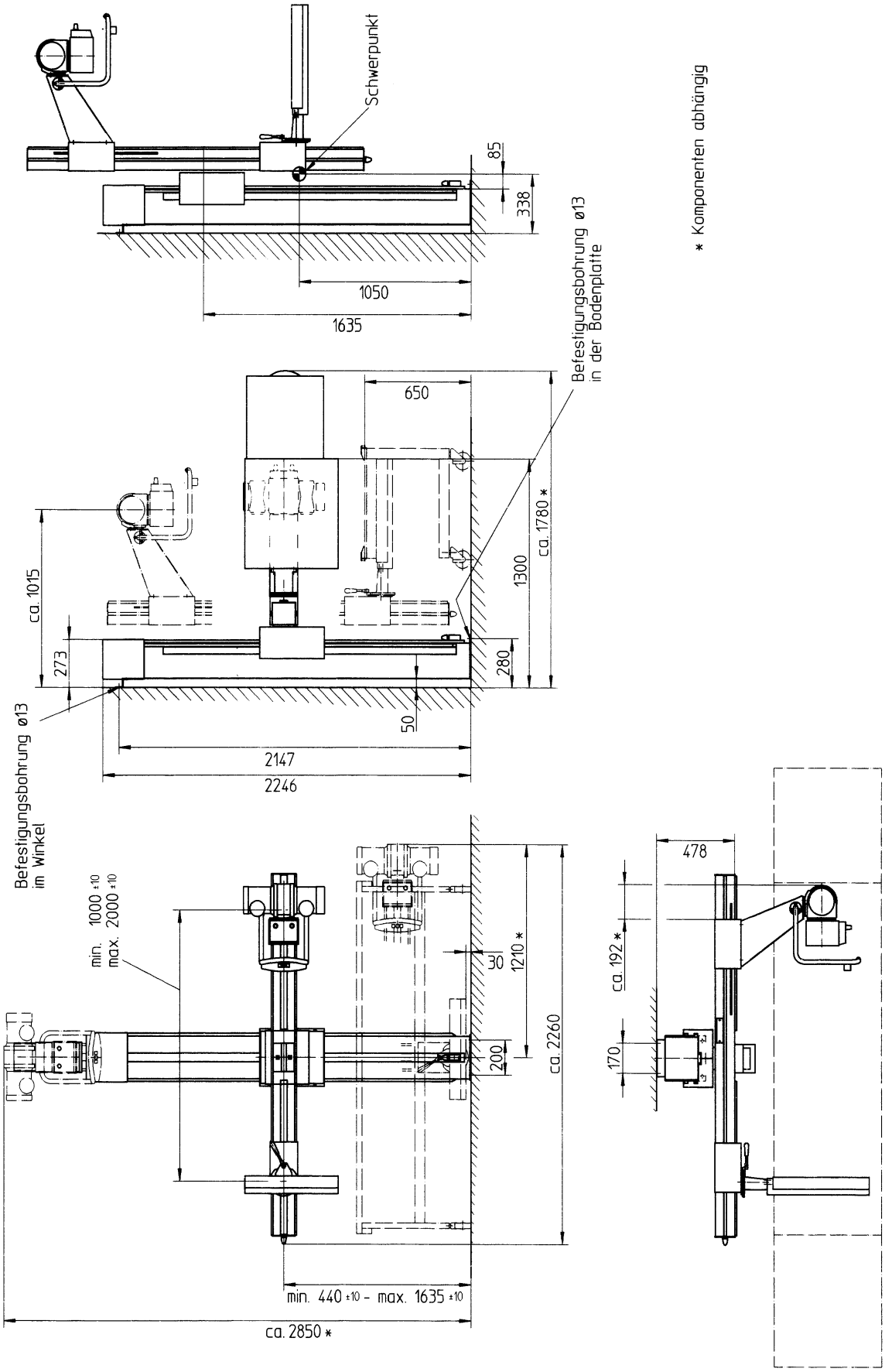
1.6 Dimensional Drawing



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1.7 Power Connection

Requirement: At the beginning of mounting the unit all electrical connections and installations must been carried out according to the ordering contract about voltage and frequency.

Nominal voltage:	115/230 V AC
Frequency:	50/60 Hz
Nominal current:	2 / 1 slow blow fuse
Power ratings:	230 VA

1.8 Special Tools and Measuring Instruments Required

Machinist's water level
Masonry drill, 12 mm (.472") diameter
1 spring scale 200 N

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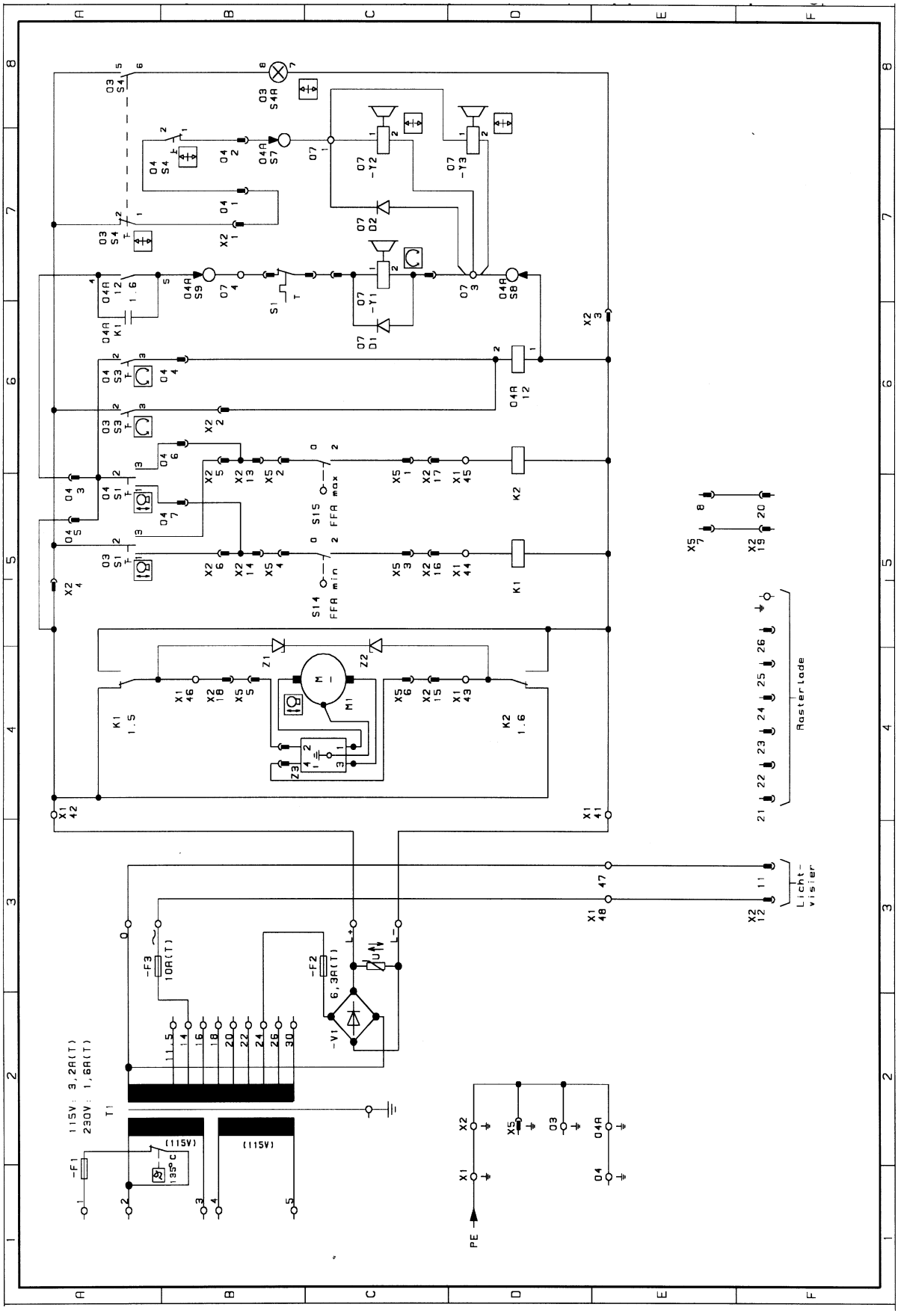
1.9 Schematics



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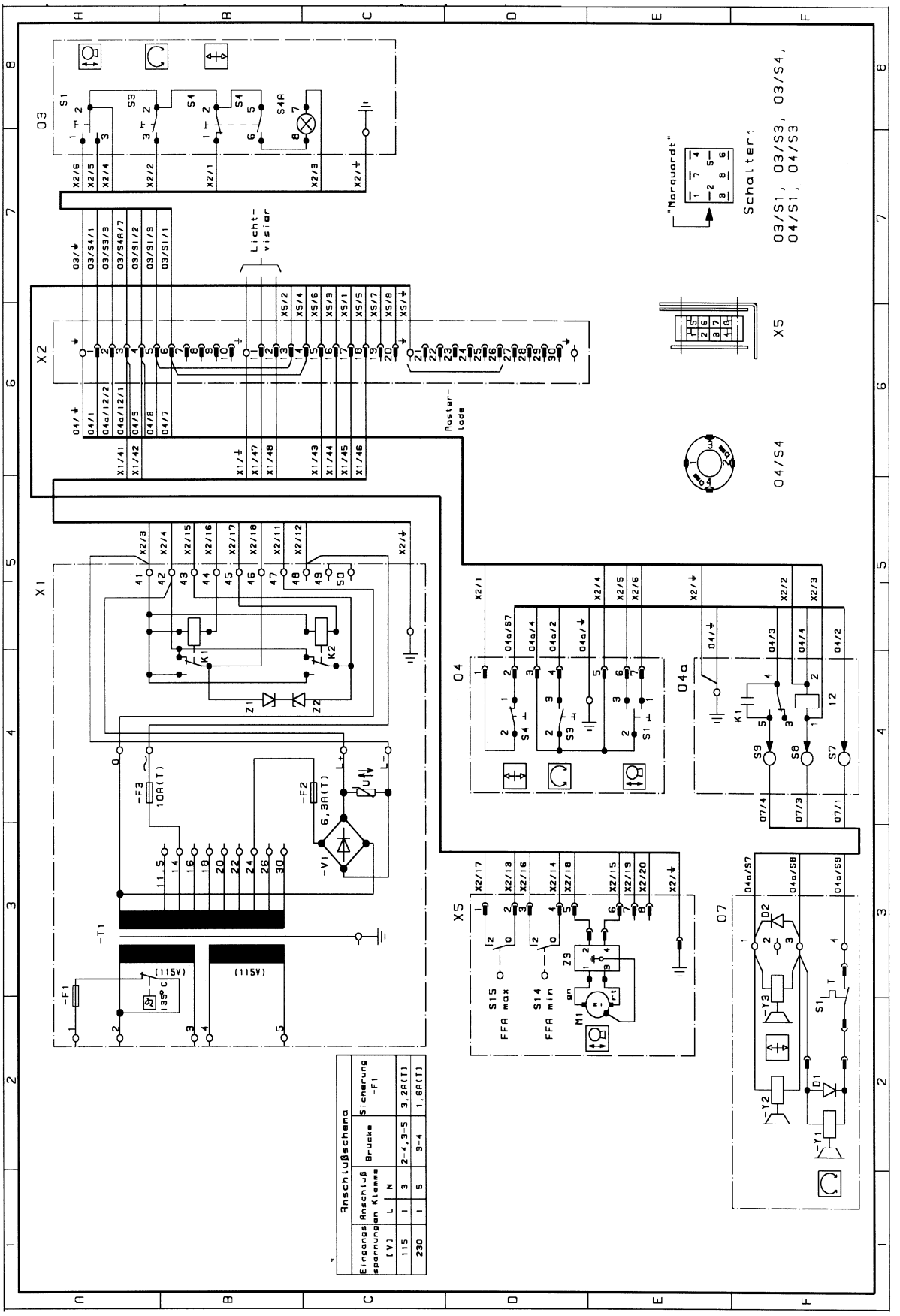
1.10 Wiring Diagram



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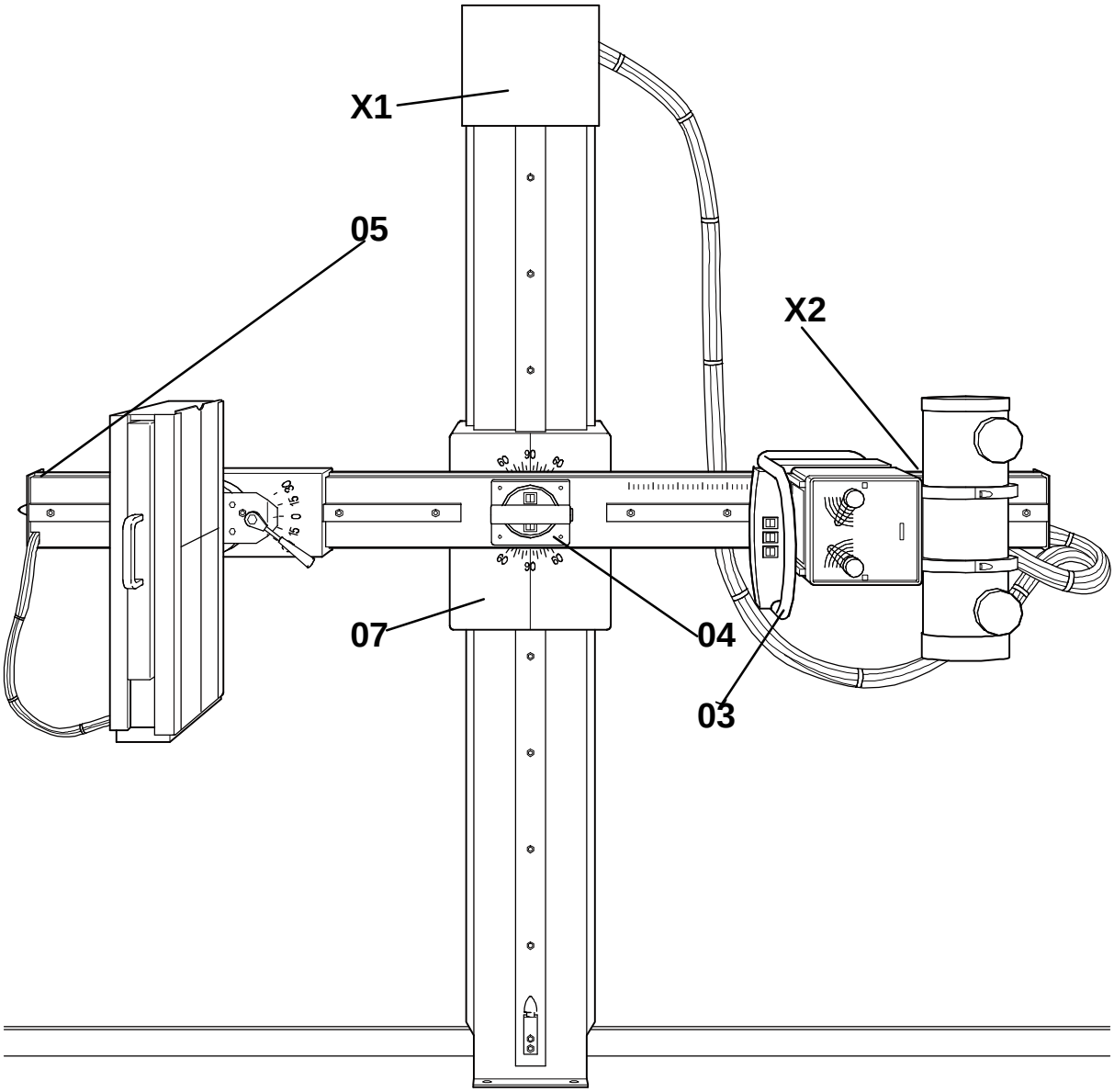
1.11 Physical Location of Electrical Components



1.12 Component Numbers and Designation

X1	Power supply
X2	Terminal strip
03	Main control handle
04	Cental control grip
X5	SID drive
07	vertical carriage

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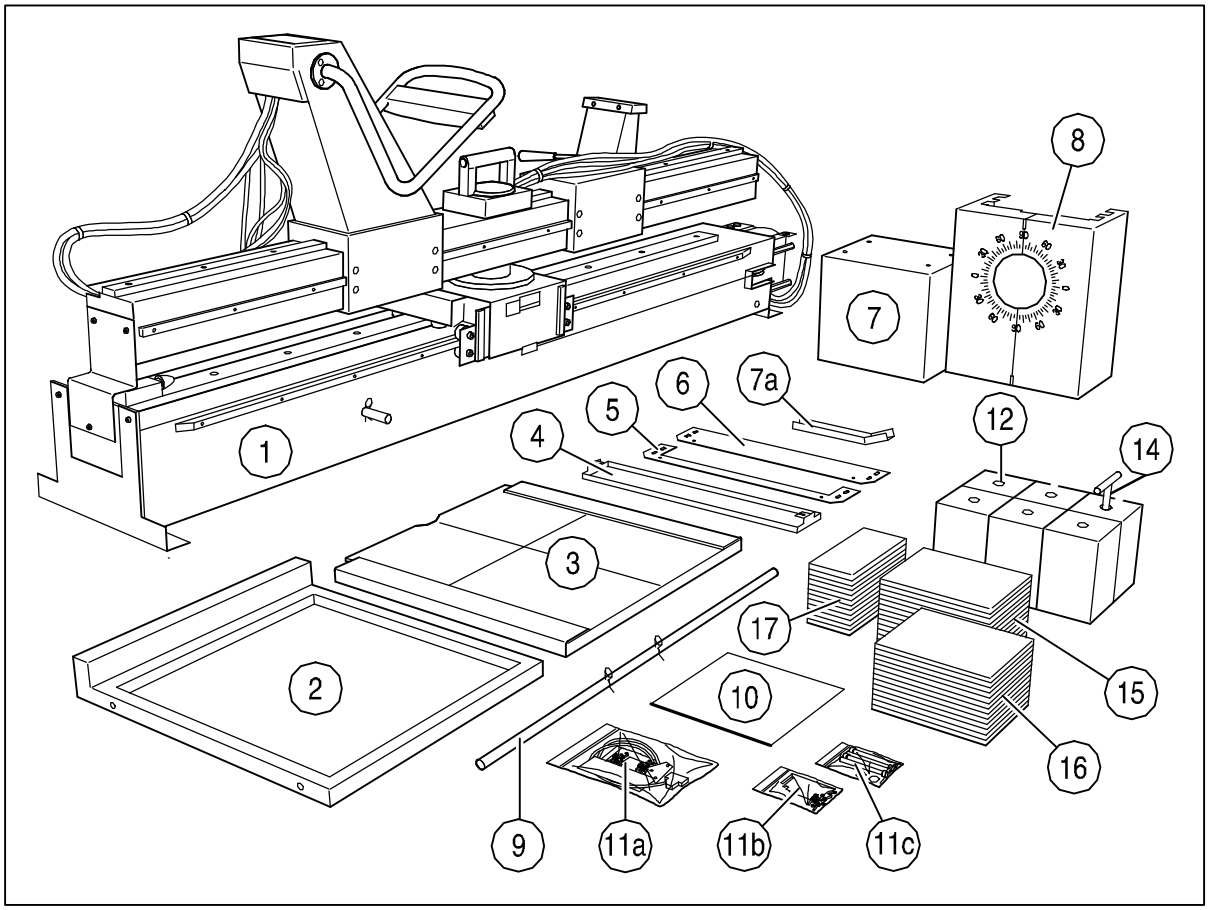
1.13 Component check list



1 Column stand with rotation arm, tube arm, control arm
2 Bucky support
3 Front plate (option - accessories)
4 Cable cover cap
5 Bucky fixing plate below
6 Bucky fixing plate above
7 Cap (head cover)
7a Cable guide (option - accessories)
8 Vertical carriage cover
9 Installation aid (lift tube)
10 Anti-slip mat
11a Fastening material Bucky
11b Fastening material tube
11c Fastening material for wall and floor
12 6 weight blocks à 12,5 kg
13
14 T-grip mounting aid
15 14 weight plates à 2 kg
16 14 weight plates à 2 kg
17 14 weight plates à 1 kg

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2. Mounting of Unit

2.1 Site Preparation

Make unit site preparation according to dimensional drawing on page 5.The bore diameter must be 12 mm. To assure all movements of the equipment pay attention to all movement possibilities.

Note: The mounting points must be suitable for tensile strength of 1000 N pull.

For example: Liebig-safety bolts S12/65 for concrete floor tensile strength classification DIN 1045 B 15.

2.2 Uncrating

Remove top and side walls of the crate (not necessary with just protection packing). Take out the Bucky support and accessories and unpack completely. Check the contents of each box with dispatch note or order to assure that all items are located. Pay also attention to page 10 1.13 Component check list.

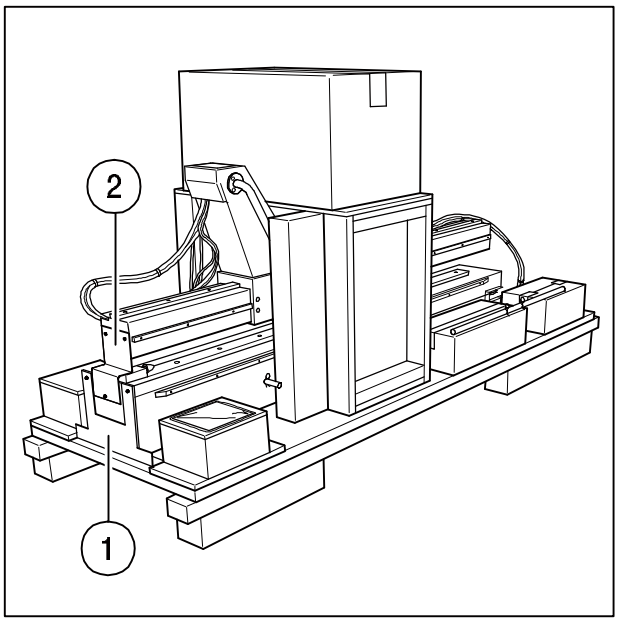

Fig. 1

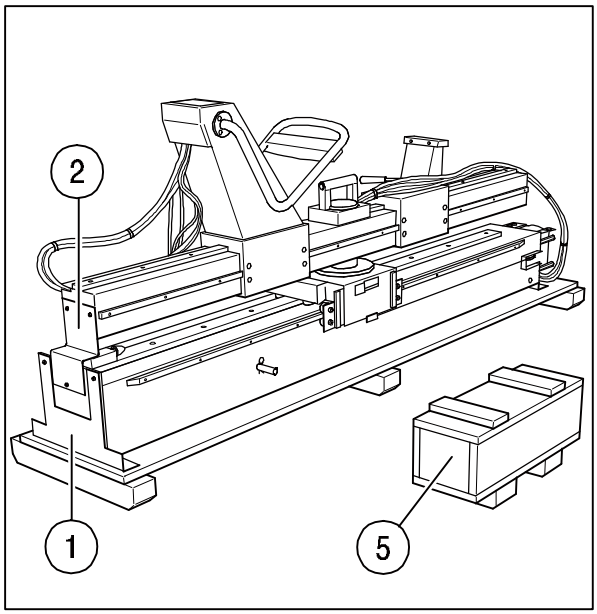

Fig. 2

Mount low voltage unit (Fig. 27) onto the rope return block with the four stay bolts.
Move equipment with the transport palette to the installation place and assure that foot end of the palette is approx. 1,5 m away from the installation wall.

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2.3 Unit preparation

Unsrew equipment (head- and foot side) from palette: Unscrew fastening angle (Fig.1/Pos.1) respectively (Fig. 2/Pos. 1).
Remove transport security (Fig. 1/Pos. 2) respectively (Fig. 2/Pos. 2) of rotation arm.

Remove caps of small cases (Fig. 2/Pos. 5) and take out counterweight plates respectively counterweight blocks carefully.

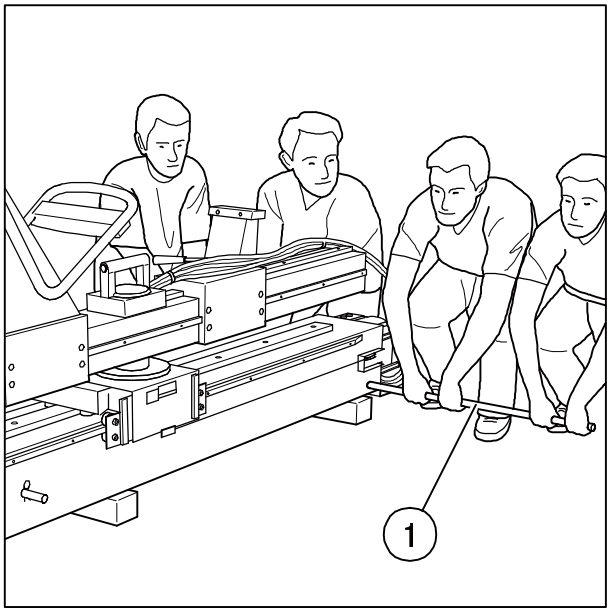

Fig.3

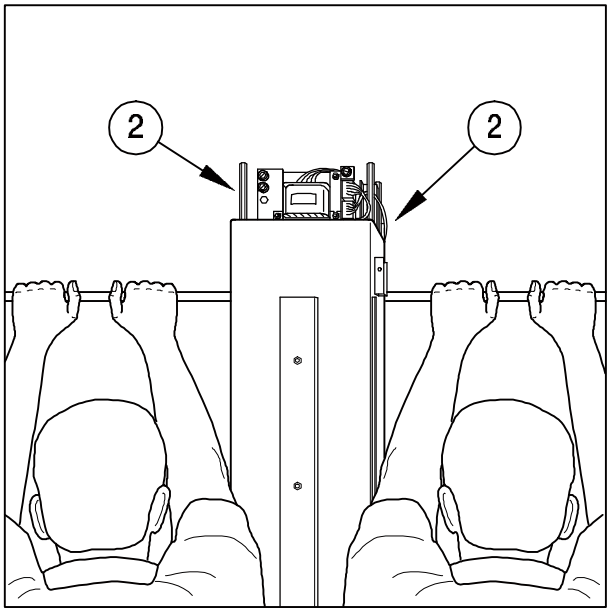

Fig. 4

2.4 Unit installation

Put installation aid (tube) (Fig. 3/Pos. 1) through the at the head side prepared bore hole of the column stand and lay down anti-slip mat approx. 20 cm from the palette. Lift with four men the installation aid and move approx. 30 cm to the foot side and mount. Rotate equipment and bring to installation place.

Attention: Do not use for lifting, bat for balancing !

Fasten temporarily onto the wall with two screws (Fig. 4/Pos. 2) and to the floor with two screws.

2.5 Leveling the Unit

Align column stand with air level (Fig. 5/Pos. 13 - Fig. 6/Pos. 14) and tighten fastening screws.

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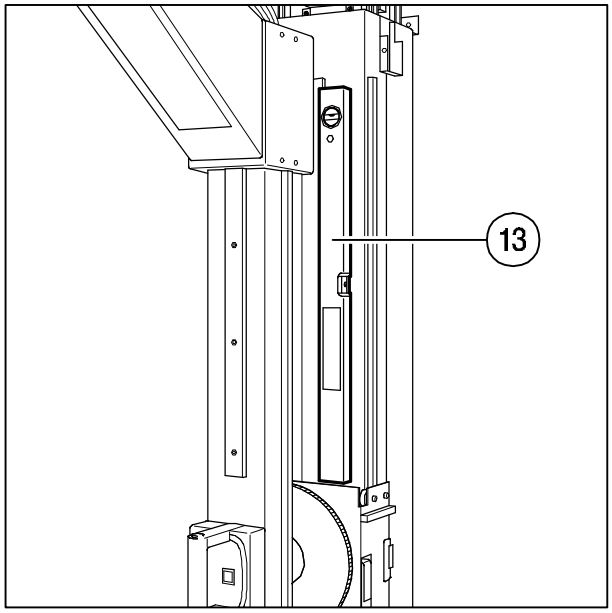

Fig. 5

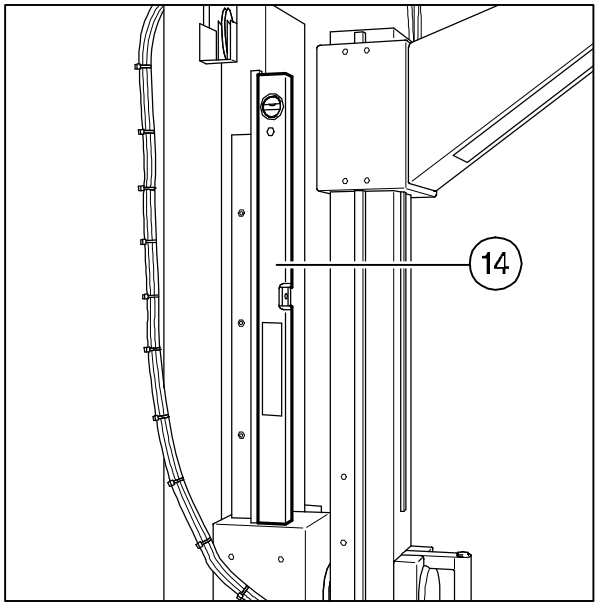

Fig. 6

2.5.1 Loading of counterweights

Remove cover (Fig. 8/Pos. 18) from column stand and strap (Pos. 19) from counter weight carriage. Insert counter weight blocks (Fig. 7/Pos. 19) with screwed in support grip (Pos. 20) in counter weight carriage.

Attention:
Insert on three levels 2 counter weight blocks each and 7 counter weight plates each.
.

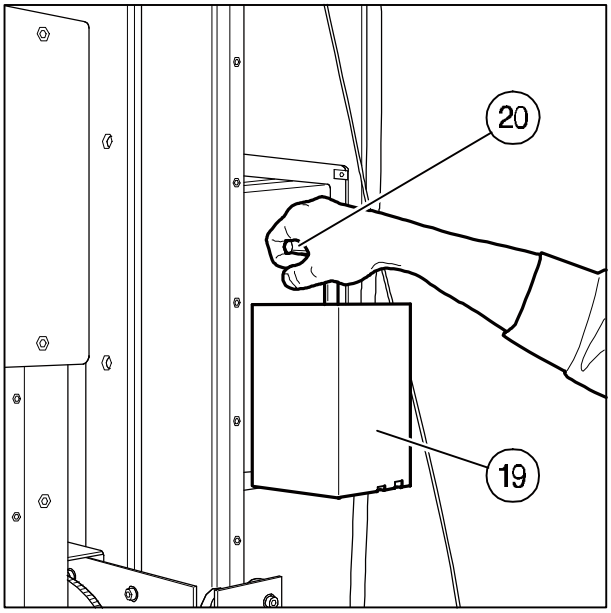

Fig. 7

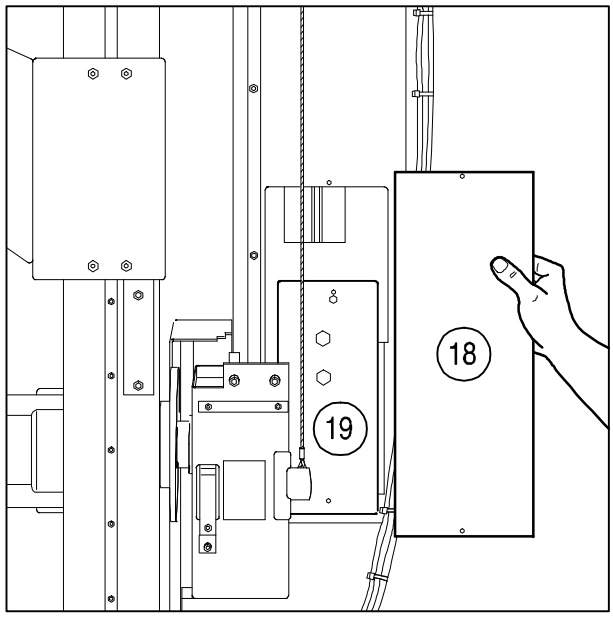

Fig. 8

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The adjustment will be done with counter balance plates. Ref. to section 3.3
Mount strap (Fig. 8/Pos. 19) on counter weight carriage and reinstall cover (Pos.18).

2.6 Mounting of Bucky Support

Put swivel arm in upright position, so that the Bucky carriage (Fig. 10/ Pos. 27) is at the bottom (Fig. 10/Pos. 28). Mount Bucky support (Pos. 27) and lining plate (Pos. 28a) with 4 screws to Bucky carriage (Pos. 28).

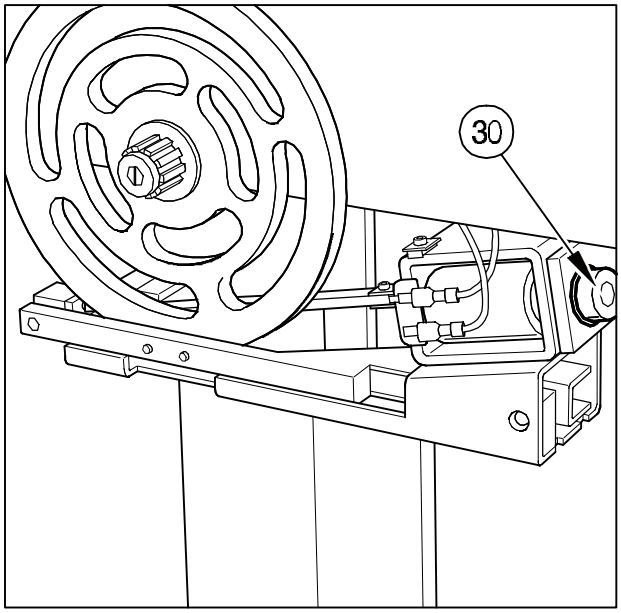

Fig. 9

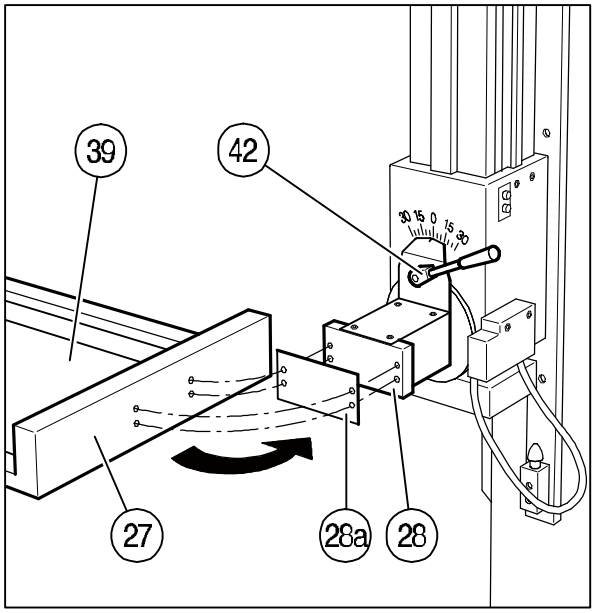

Fig. 10

2.7 Mounting of Control arm

Release the rotation brake while pushing onto the armature (Fig. 9/Pos. 30) and rotate rotation arm about 90° carefully. Dismount cover (Fig. 11/Pos. 31+29) from the tube support (Pos. 32). Dismount control arm (Pos. 33) and remount again 180° rotated.

2.8 Mounting of X-Ray Tube and Collimator

Lift rotation brake while pushing onto the armature (Fig. 9/Pos. 30) and rotate rotation arm carefully by 90°. Bring tube (Fig. 11/Pos. 34) to the tube support (Pos. 32) and fasten with 4 screws. Put collimator (Pos. 36) onto the tube (Pos. 34) and fasten.

Rotate again rotation arm by 180°.

Attention:

The weight counterbalance of the rotation arm is not counterbalanced.
There is a risk of accident !

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2.9 Mounting of Bucky

Liebel - Flarsheim -, Laufrasterlade P-, Philips - Bucky

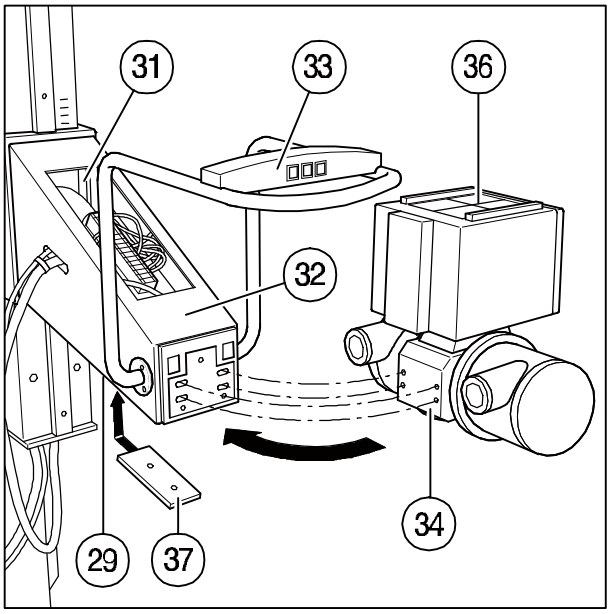

Fig. 11

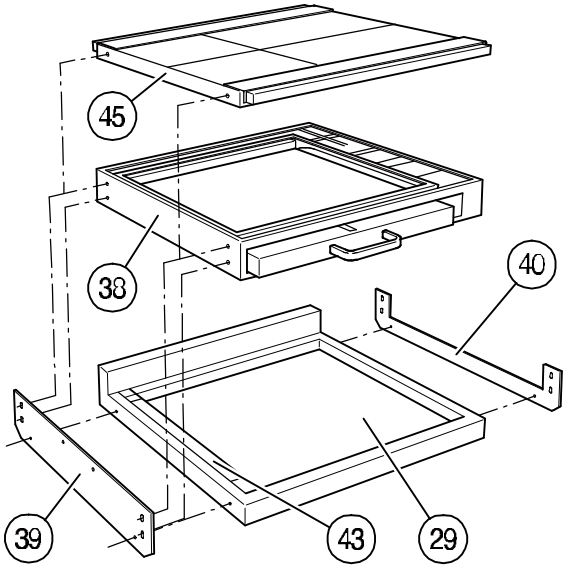

Fig. 12

Place Bucky (Fig. 12/Pos. 38) onto Bucky support (Pos. 29). Mount Bucky with fastening means (Pos. 39, 40) to Bucky support (Pos. 29). Mount Bucky front cover (Pos. 45) to Bucky.

2.10 Release of vertical drive

Dismount fall brake security (Fig. 15/Pos. 1). Dismount vertical carriage (Pos. 2) and fasten the guide rails with two screws (Pos. 3). Take the support bolt (Fig. 16/Pos. 1) out of the column stand.

Attention!

Bevor putting in operation:
Remove sipping bracket !

Attention:
Park fall brake security (Fig. 15/Pos. 1) and the vertical carriage security (Fig. 15 /Pos.2) onto the vertical carriage according to Fig. 17 and store the support bolt (Fig. 16/Pos. 1) safely. These parts are necessary for services.

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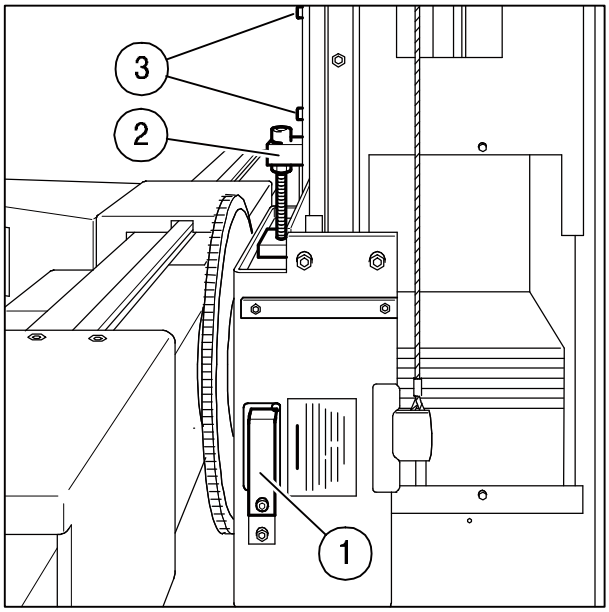

Fig. 15

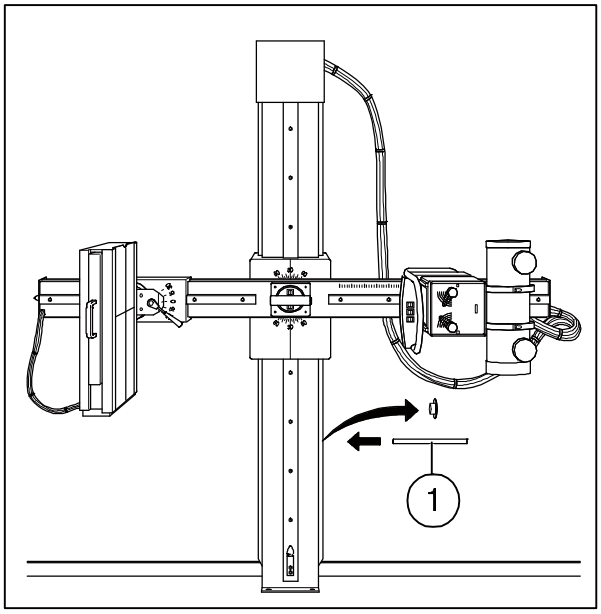

Fig. 16

2.11 Electrical Connections

Connect control arm connection cable for the operating controls in the tube support (Fig. 11/ Pos. 32) to the terminal strip. Connect mains supply to the low voltage power supply at the head piece.
Connect all electrical connections according to wiring diagram respectively the attached wiring diagram.

2.12 Mounting of covers

Put both half of the vertical carriage covers (Fig. 18/Pos. 2+3) on the vertical carriage and fasten with 4 screws. Put cover (Fig. 18/Pos. 4) from above over power supply (head part) and fasten with 4 screws.

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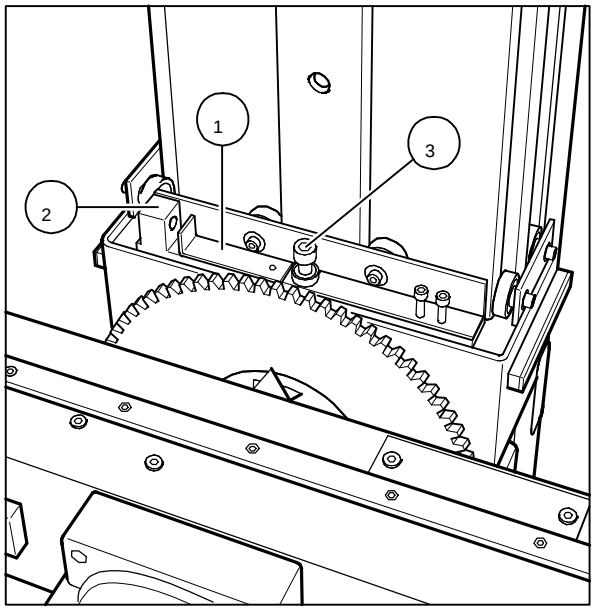

Fig. 17

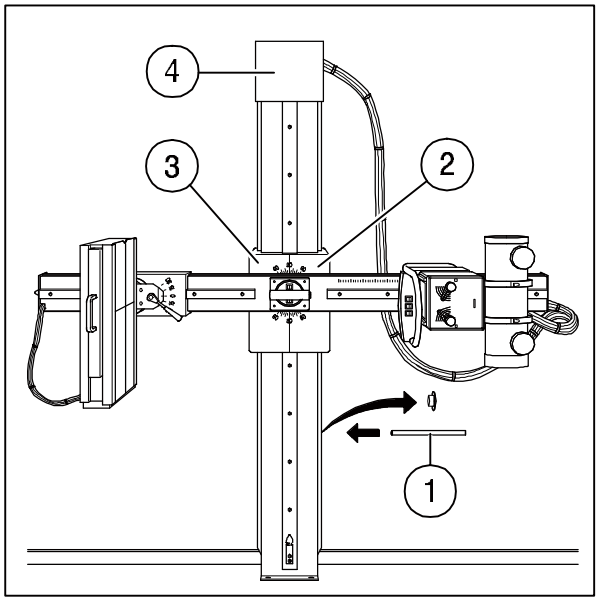

Fig. 18

3. Adjustments

(Factory adjustment and field change activity)

3.1 Bucky Tilt Adjustment

Put the swivel arm in upright position, so that the Bucky is at the bottom. Loosen lock (Fig.10/ Pos. 42) and determine weight difference with means of a spring scale of the Bucky angulation. In case of weight differences: remove Bucky and compensate weight difference with trim weights. Reinstall Bucky.

3.2 Adjustment of Rotation

Put swivel arm in horizontal position, remove cover (Fig. 11/Pos. 29 and 31), adjust weight difference with trim weights (Fig. 11/Pos. 37) in tube support.

3.3 Adjustment of vertical carriage

Release vertical brake and fasten weight balance with spring scale. Drive vertical carriage downwards (mid of travel way) until the sleeve of the counterbalance is at the same height as the bore hole in the column stand for the support bolts and put support bolts (Fig. 18/Pos. 1) through column.

Remove cap (Fig. 8/Pos. 18) from column stand and the strip (Pos. 19) from weight case.

Attention: Danger when the support bolt (Fig. 18/Pos. 1) is not properly placed in the column.

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Switch off power supply. Adjust weight difference with weight plates and insert in counterweight box. Install security sleeve (Fig. 8/Pos. 19) onto counterweight box and lock column with cap (Pos. 18).
Remove support bolt (Fig. 18/Pos. 1) from column.

3.4 Adjustment of Rotational Lock

Remove the left and the right trim cover (Fig. 18/Pos. 2+3) of the vertical carriage. Loosen counter screws (Fig. 19/Pos. 67). Turn adjusting nut (Pos. 68) clockwise for more lock holding force. Tighten counter screw (Pos. 67) again.
Note:
The brake lever (Pos. 69) should be parallel to the edge of the vertical carriage. If necessary change position of lock screw (Pos. 71) and counter lock it with nut (Pos. 72) again.

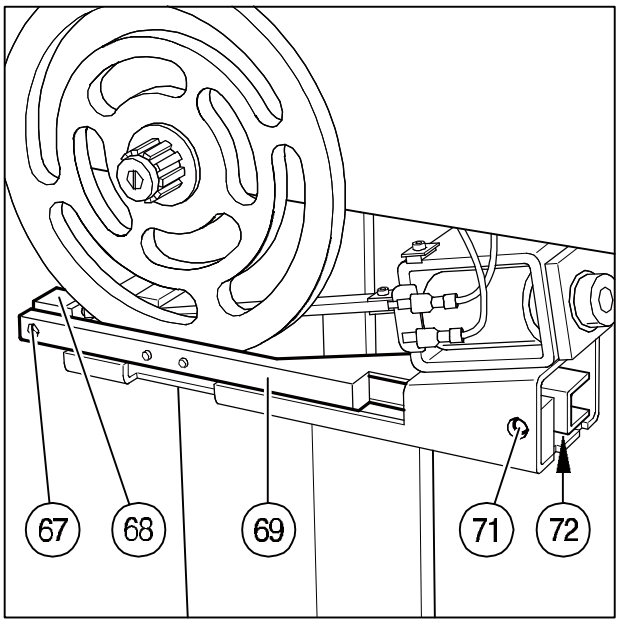

Fig. 19

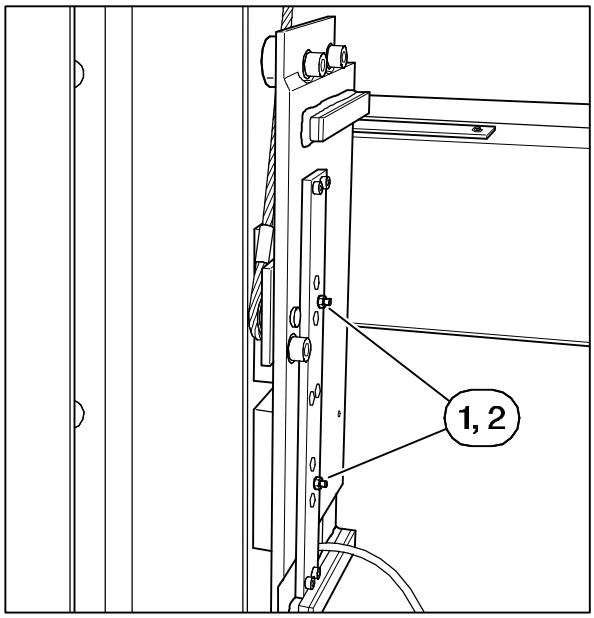

Fig. 20

3.5 Vertical Lock

Remove the left trim cover of the vertical carriage (Fig.18/Pos. 2+3). Loosen counter nut (Fig. 20/ Pos. 1) and adjust the gap of the brake to 0.2 mm with set screw (Pos. 2). Fasten counter nut again and install trim cover of the vertical carriage.

3.6 SID Pointer

Determine SID - distance and adjust the pointer (Fig. 21/ Pos. 74) to desired position.

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3.7 SID Drive Clutch

Remove cover (Fig.22/Pos. 76). Adjust the torque with means of the 3 screws (Pos. 77). For higher torque turn screws (Pos. 77) clockwise.

Note:
The stop motion force of the Bucky- or tube carriage should be set to 150 N max. Secure screws with locking dye and mount cover again.

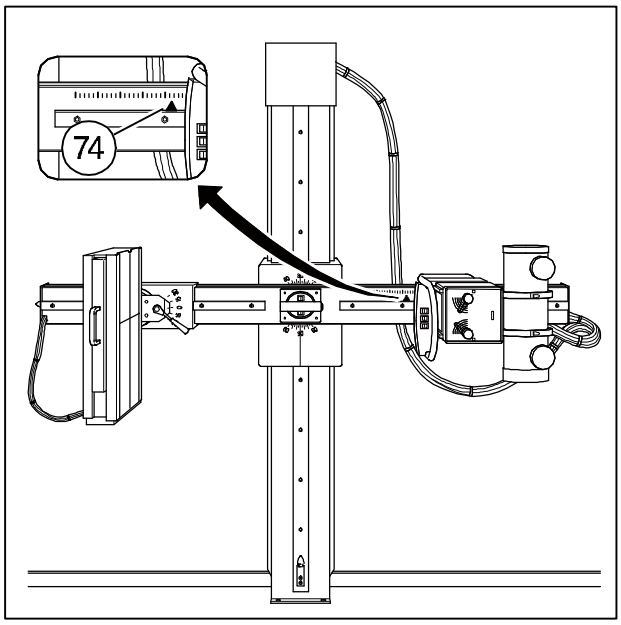

Fig. 21

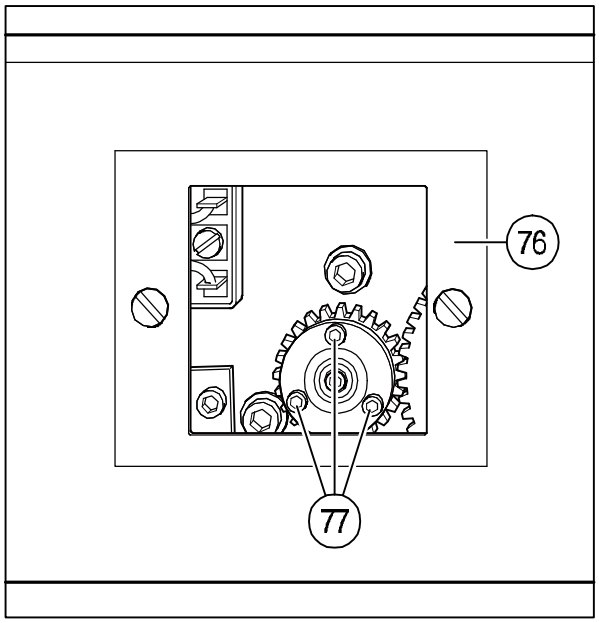

Fig. 22

3.8 SID End Switch

Remove end cover of swivel arm (Fig.23/Pos. 79). Drive SID to minimum distance possible. Loosen trip cam (Pos. 81) with socket wrench and turn the cam until switch (Pos. 82) is actuated. Tighten trip cam. Put SID to maximum distance, loosen trip cam (Pos. 83) and turn it until switch (Pos. 84) is actuated. Fasten trip cam again.

Note: The SID is variable from 1 m to 2 m distance but can be limited in any intermediat distance.

Install trim cover (Pos. 79) again.

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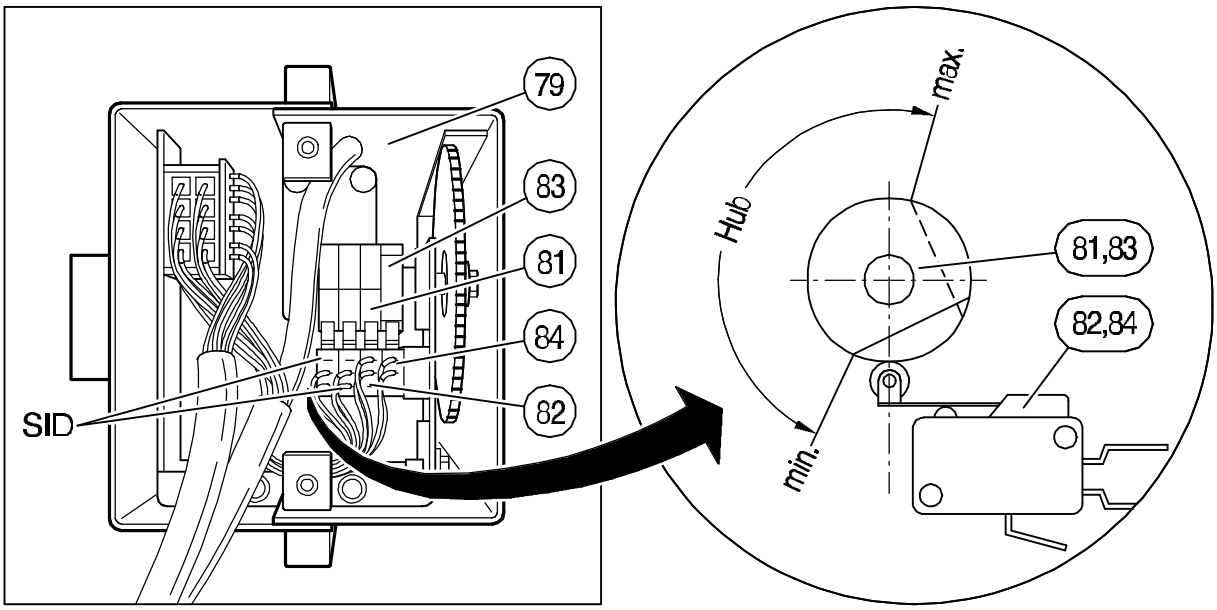

Fig. 23

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4. Technical Maintenance

4.1 Mechanical and Electrical Checks

The maintenance schedule described below is to be accomplished at 12-month intervals.
Whenever in the course of these procedures, parts of the unit must be moved electromotively, or if functional tests require power, disconnect the power as soon as the part has reached the new position, or after the appropriate functional test sequence. Defective parts must be replaced by genuine spare parts according to the spare parts list.
Use only non-acid grease for maintenance. Do not grease or oil ball bearings with sealing washers.

Preparation: Turn off unit. Remove cover (Fig. 25/Pos. 1) the cover of the vertical carriage (Pos. 6+7) and cover (Pos. 8)

Floor and wall mounting Check all fastening screws and tighten if necessary. Torque 50 N.

Vertical carriage Clean the guide rails of the column and check for damage. Slightly grease the rails again.
Clean wire ropes (do not use any solvents) visually inspect the ropes for traces of wear. Lightly apply lubricant.

Steel rope Clean steel rope (do not use fat solvents) and check upon damage. Check on smooth running over entire travel range. At the slightest sign of damage - (if there are 12 or more broken single lodes of the rope up to 100 mm or 3 and more single lodes up to 10 mm or a single lode broken) - inform the user directly. Further use of the equipment could endanger the security of patient and user. Do not use the equipment until the defective rope has been replaced.

Attention: The exchange of the rope has to be done at least every 3 years

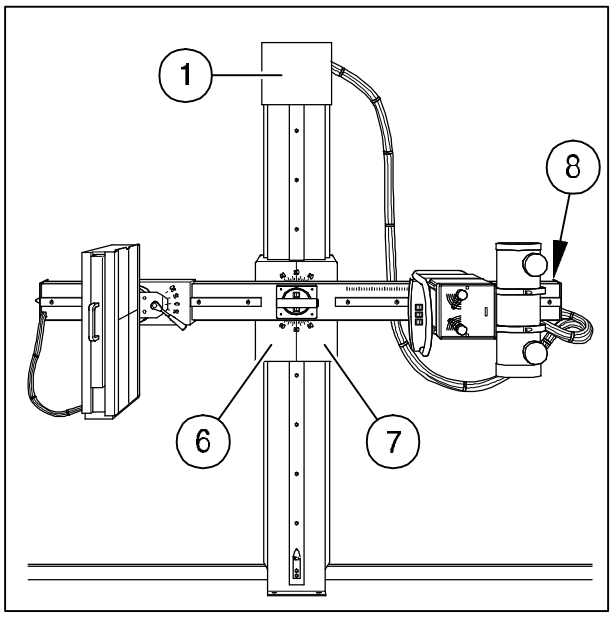

Fig. 25

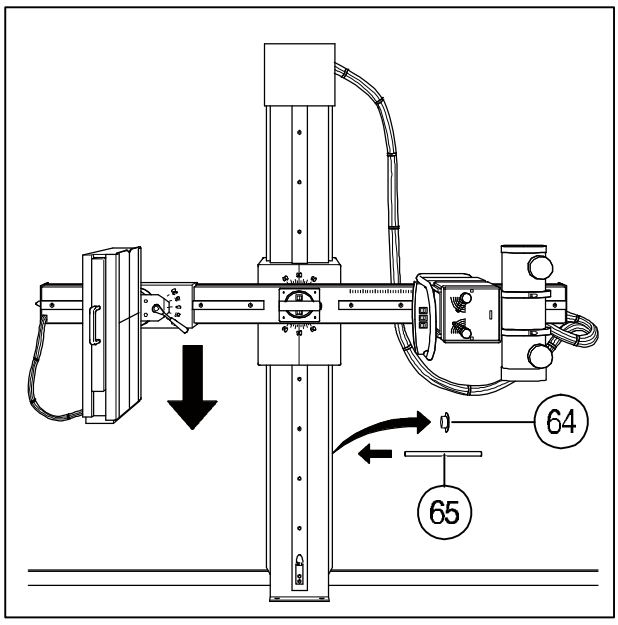

Fig. 26

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Safety brake: Functional check of the safety brake. Move vertical carriage all the way down. Remove plastic caps (Fig. 26/Pos. 64) from both sides of the column. Insert steel rod (Fig. 26/Pos. 65). Lower the counter weight carriage to rest on steel rod. Lift up the vertical carriage a little bit and let go. The carriage must hold by the safety catch.
Lift up the vertical carriage again while pulling the wire rope upwards to release the safety catch. Then slowly lower the vertical carriage until it is held by the wire rope. Move counter weight carriage all the way up. Remove steel rod and close up holes with plastic caps.

Check function of lock and tighten if necessary. Therefor adjust the counter locked screw (re. to section 3.5).

Rotational lock Check function of the rotational lock. Should hold 300 N at the end of the swivel arm (1m at radius), adjust if necessary. Ref. to section 3.4

Swivel arm SID-adjustment Clean guide rails and check for traces of wear. Apply lubricant lightly. Clean the chain and regrease lightly. Check end switches; adjust if necessary. Re to sec. 3.8.
Check slip clutch and adjust if necessary. Re. to sec. 3.7.

Tighten and adjust tension of the chain or fastening points at the Bucky carriage or tube support.

Bucky carriage Check for proper fit of all mounting screws and tighten if necessary. Check brake lever function of the Bucky tilting movement. Relocate brake lever if necessary.

Tube carriage Check for proper fit of all mounting screws and tighten if necessary. Check mounting screws of X-ray tube and control arm.

Electrical checks Check all electrical cables for damage, proper routing and strain relief. Check all ground connections. All exposed dead metal or other conductive parts that are exposed to contact during any servicing operation, including maintenance and repair shall be connected to the equipment grounding terminal and must carry less than 0.1 ohms resistance.

Control arm and main Handle Check all electrical switch functions of the unit. Replace defective switches.

Final work Clean unit and mount all trim covers again.

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Changing wire rope: Remove cover cap (Fig. 25/Pos. 1), carriage cover (Pos. 6+7) and low voltage supply (Fig. 27/Pos. 1). Take plastic caps (Fig. 26/Pos. 64) out of column.
Drive vertical carriage downwards (mid of travel way) until the sleeve of the counterbalance is at the same height as the bore hole in the column stand for the support bolts and put support bolts (Fig. 26/Pos. 65) through column.

Attention:
Danger when the support bolt (Fig. 18/Pos. 1) is not properly placed in the column.

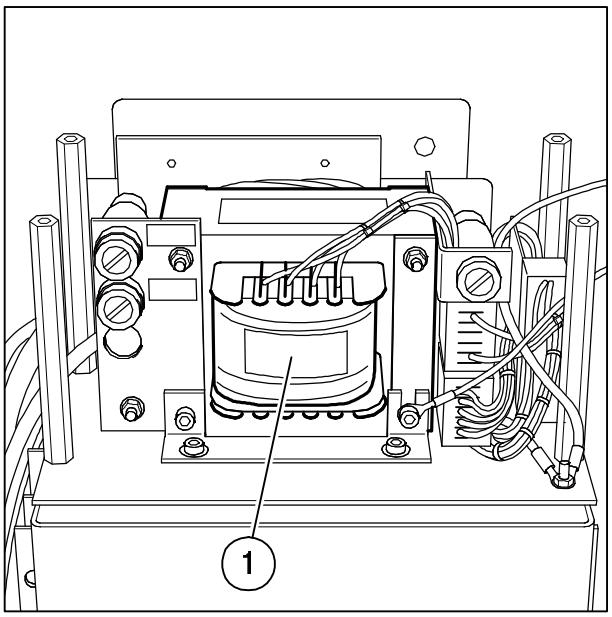

Fig. 27

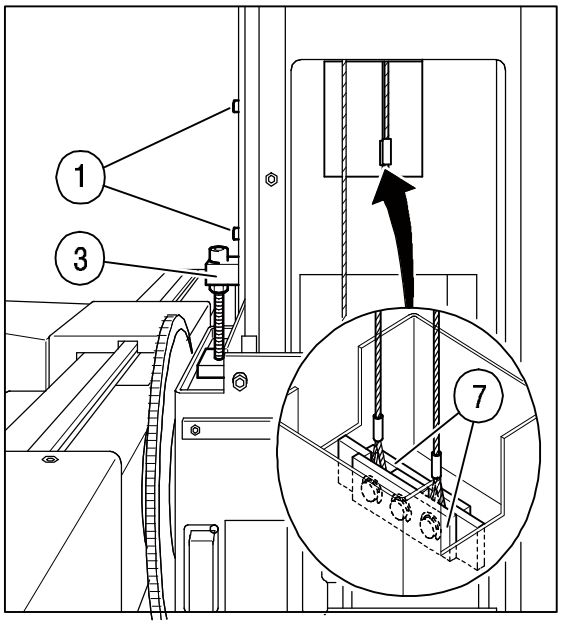

Fig. 28

Remove both screws (Fig. 28/Pos. 1). Take vertical carriage security (Pos. 1) out of park position (Fig. 29) and mount to guide rail. Lift vertical carriage approx. 15 mm with tension screw (Fig. 28/Pos. 3). Dismount connection board (Pos. 7) from counterbalance.

Loosen both steel ropes on vertical carriage (Fig. 31/Pos. 1 + Fig. 32/Pos. 1). Lift pulley carrier (Fig. 30/Pos. 1) with steel robes. Remove robe pulley (Fig. 30/Pos. 2+3) out of pulley carrier and dismount old steel robes. Insert new steel robes carefully over robe pulley into pulley carrier.

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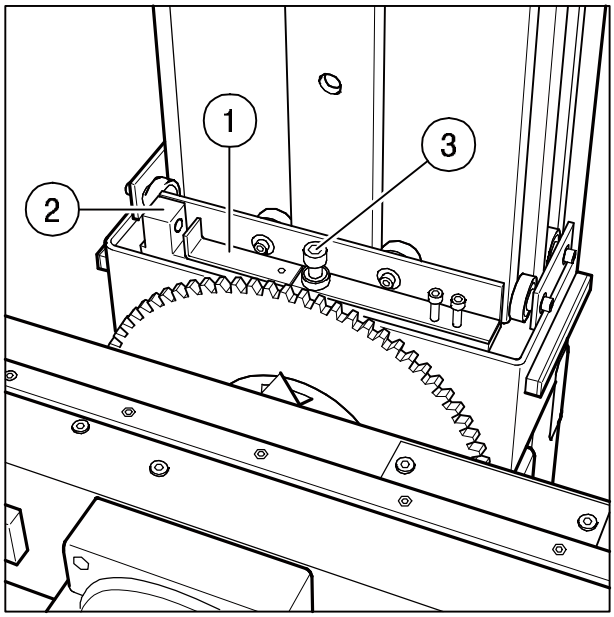

Fig. 29

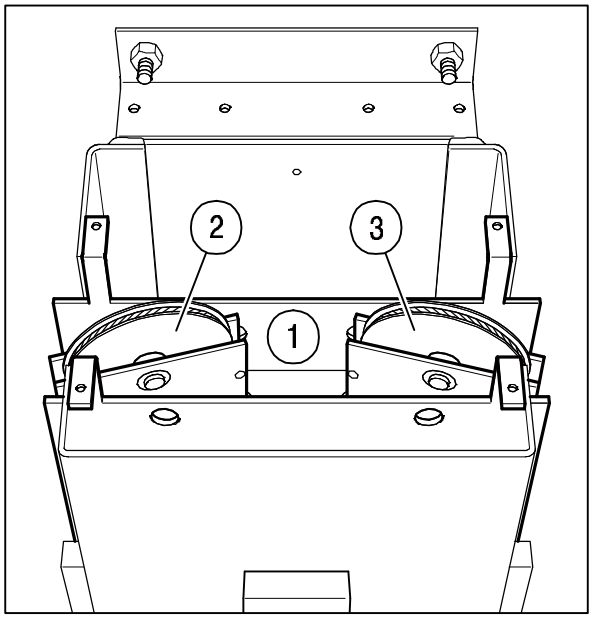

Fig. 30

Reinsert pulley carrier into column stand. Hook up rope ends at vertical carriage and connecting piece and mount to counterweight.

Attention: Wire ropes must not be damaged nor twisted.

Let off vertical carriage with tension screw and loosen at the same time safety brake by pulling rope upwards and slowly lower vertical carriage until it hangs at the counterweight.
Take bolt out of column and put plastic caps onto the holes.
Install low voltage supply, carriage cover and cover cap again.
Remove vertical carriage security (Fig. 28/Pos. 1) again and park.

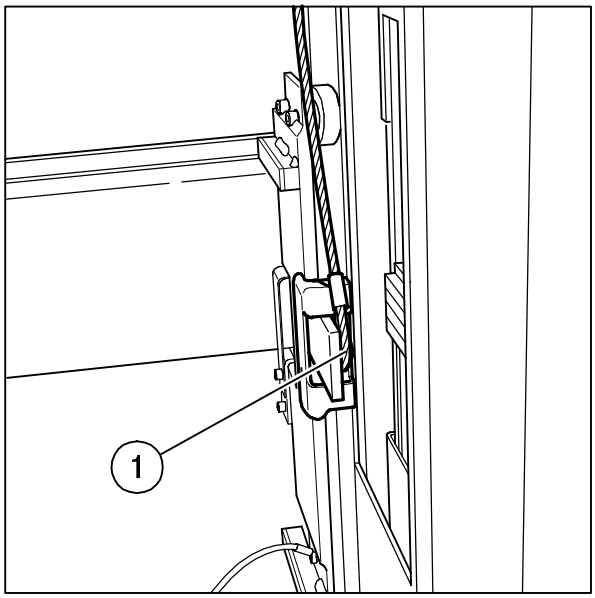

Fig. 31

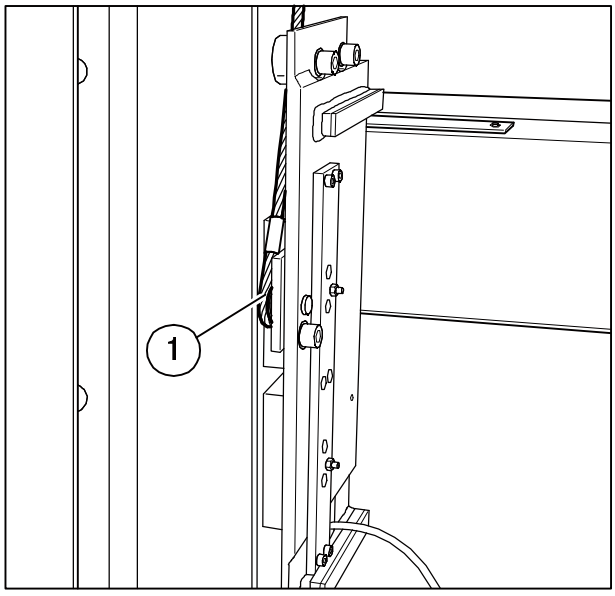

Fig. 32

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4.2 Functional checks

Swivel arm

Move swivel arm through its entire range of rotation.
Easy movement?
Quiet running?
Save locking in any working position?
Proper working of the brake?

Motorized SID

Drive through entire travel range.
Quiet running?
Proper function of slip clutch with 150 N counter force applied?
Proper functioning of the limit switches in its end position?

Bucky tilt motion

Loosen Bucky lock and turn Bucky 45 °

Proper working of the brake?
Save locking in any working position?
Positive detent at 0 °?

Vertical movement

Move the vertical carriage thru its entire range of vertical travel.

Proper working of the locks in any working position?
Quiet running?
Twist-free running of the wire ropes?
Easy motion?
Cushioned end stops at the end of travel?

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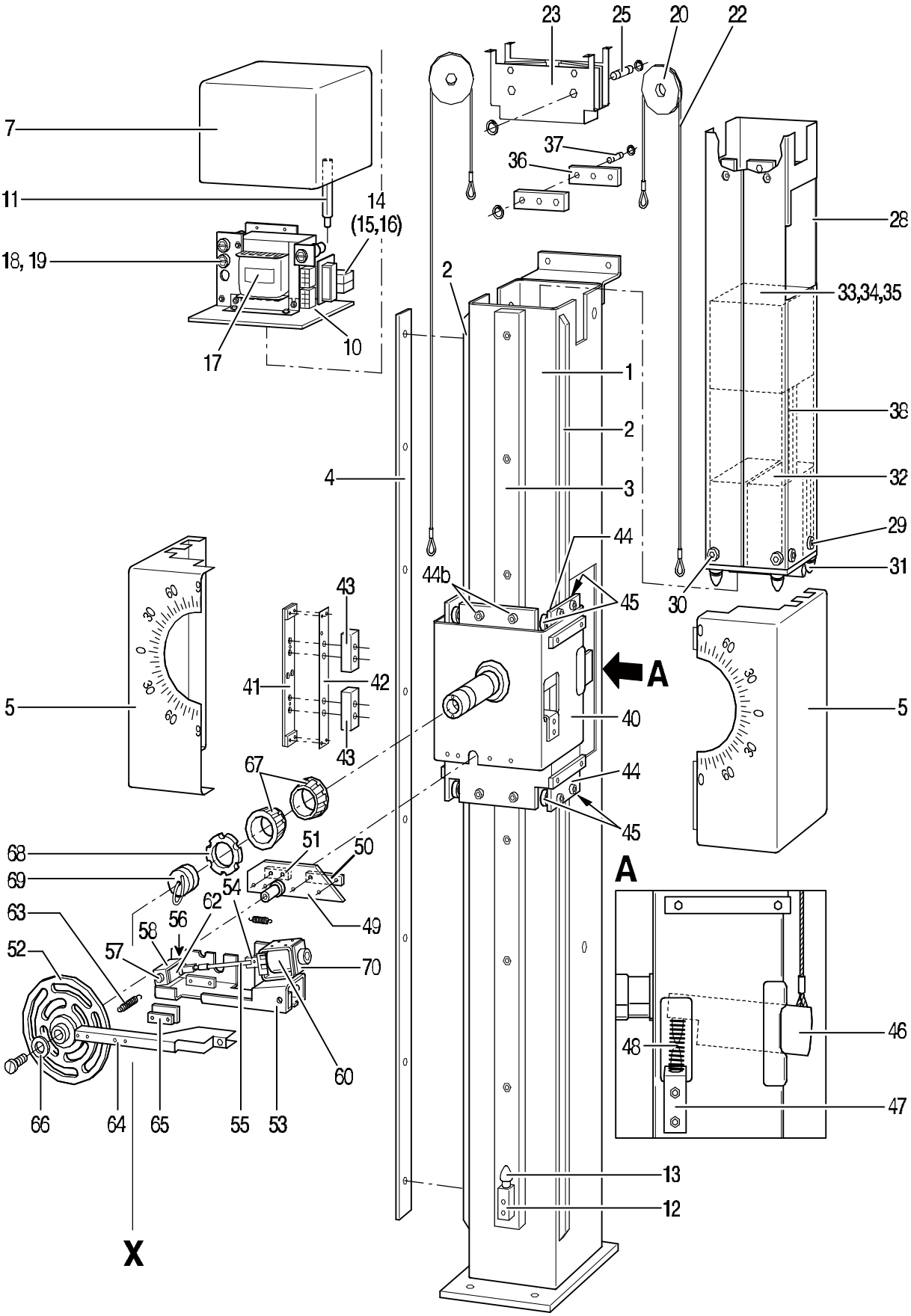
4.4 Spare Parts



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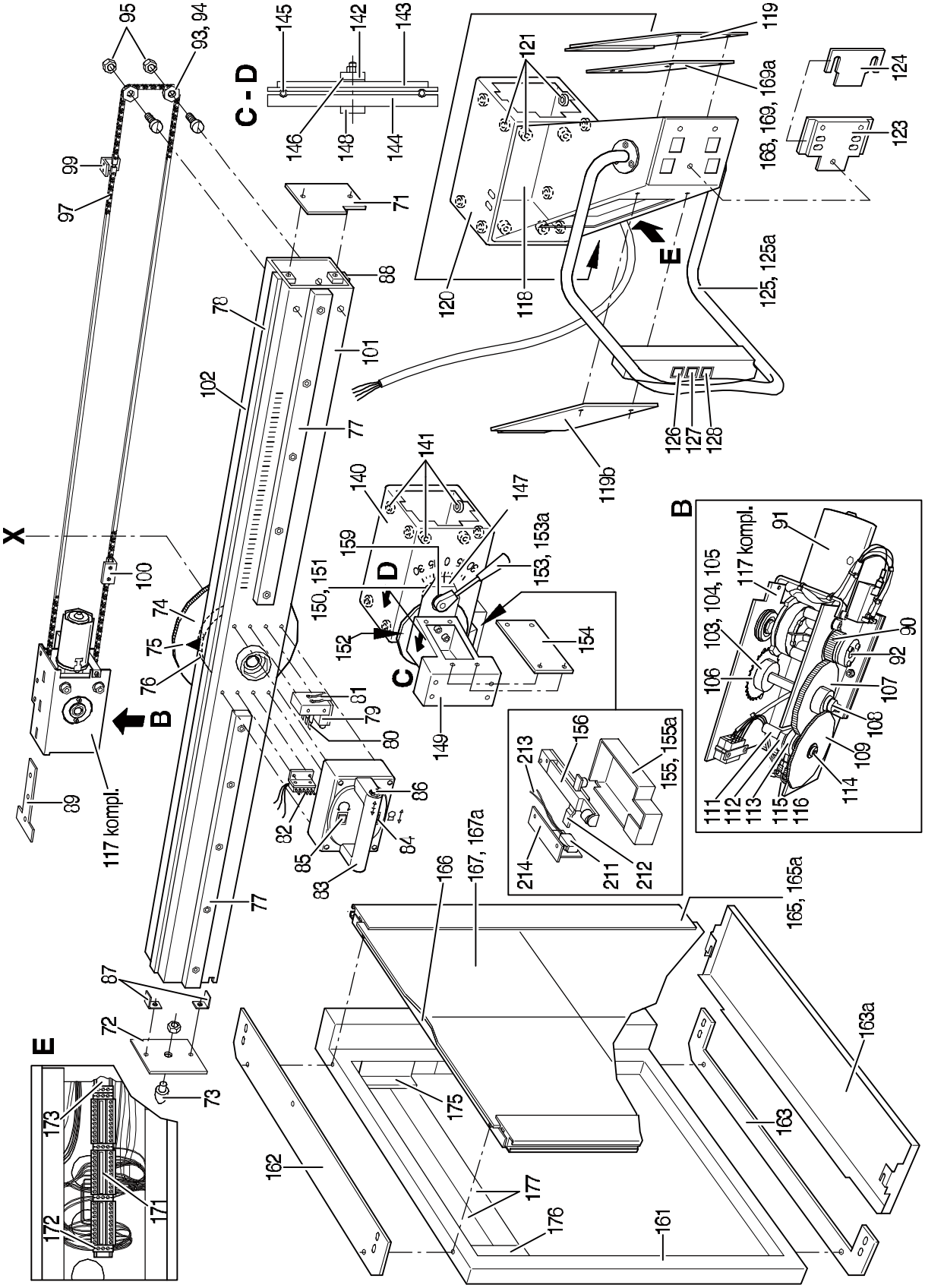
4.3.1 Spare Parts



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4. Spare Parts List

List Part Names / Ordering Numbers

Failed spare parts may be replaced only with original parts as listed below. When ordering spare parts, always indicate serial number of unit and complete number of part. The exchange of parts or elements may only be carried out by ourselves or by qualified personnel being authorized to do so.
See also chapter "Safety Notes".

REF-No.	Name	Part.-No.
1	Column	0380 1550
2	Rail	0380 1541
3	Rail	0380 1542
4	Brake Rail	0380 1543
5	Trim Cover	0380 0175a
6		
7	Top Trim Cover	0380 1585
8		
9		
10	Mounting Plate	0380 0032
11	Stud	0380 0078
12	Stop	0380 0074b
13	Parabolic Spring	0005 0103b
14	PC Board complete	0380 0038
15	Relay	0006 0111
16	Clamp	0006 0109
17	Low Voltage Power Supply	0006 0449
18	Fuse Cap (5 x 10)	0006 0152a
19	Fuse Cap (6,3 x 32)	0006 0152b
20	Pulley	0381 0930
21		0006 0429
22	Wire Rope	0381 0336c
23	Tub	0381 0327
24	Ball Bearing DIN 625	2400 0016
25	Bolt for Pulley	0381 0330
26	Plug holder Phi	0380 2109
27	Not used	
28	Counter Weight Carriage	0380 1570
29	Slider	0380 0211c
30	Slider	0380 1578
31	Parabolic Spring	0380 0212
32	Trim Weight 1,85kg	0380 1571a
33	Trim Weight 0,95 kg	0380 1572a
34	Trim Weight 1,85 kg	0380 1574
35	Trim Weight	0380 1572a
36	Ledge	0381 0339
37	Bolt	0381 0338
38	Weight 2 kg	0380 1573b
39	Handle	0380 1595
40	Vertical Carriage comp.	0380 0050

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REF-No.	Name	Part-No.
41	Bridge	0380 1600
42	Laminated Spring	0627 0682
43	Solenoid	0006 0603
44	Roller	0380 1224
44b	Roller	0380 1229
45	Roller	0380 0060b
46	Safety Catch	0381 0794b
47	Bearing	0381 0790
48	Spring	0005 0136k
49	Holding Plate	0380 0888
50	Nut Plate	0380 0406
51	Nut Plate	0380 0407
52	Brake Disc assembly	0380 0410
53	Bracket	0380 0895
54	Link	0380 0394
55	Rod	0380 0886
56	Adjusting Screw	0380 0389
57	Lock Nut	0380 0882
58	Set of Links	0380 0884a-c
59	Not used	
60		0380 0540
61	U-Roller	0380 0871
62	Not used	
63	Spring	0005 0040o
64	Lever comp.	0380 0384
65	Brake Set	0380 0398
66	Disc	0380 0414
67	Bearing DIN 720 32009X	2400 0031
68	T-Nut	0380 0091
69	Slip Ring	0380 0156
70	Solenoid	0006 0175
71	Cover	0380 2103
72	Cover	0380 2104
73	Parabolic Spring	0005 0103a
74	Gear Wheel	0380 0359
75	Pointer	0380 0105
76	Ring	0380 0094
77	Front Rail	0380 0104
78	Top Rail	0380 0102
79	Relay	0006 0111
80	Carbon Brush	0006 0200
81	Bracket	0380 0310
82	Plug	0006 0504c+d
83	Main Handle	0380 2110
84	Commutator Switch	0006 0182b
85	Commutator Switch	0006 0182a
86	Push Button Switch	0006 0651ca
87	Angle	0380 0101
88	Rail	0380 0103
89	Nut Plate	0380 0127
90	Sprocket	0380 0577
91	Motor	0006 0365
92	Slip Clutch	0005 0214a

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REF-No.	Name	Part-No.
93	Guide Pulley	0380 0096
94	Ball Bearing DIN 625	2400 0015
95	Insert Bushing	0380 0098
96	Washer	0380 0099
97	Single Roller Chain	0380 0107a
98	Single Roller Chain	0380 0107b
99	Chain Support	0380 1014
100	Connecting Angle	0380 1013
101	Swivel Arm Support	0380 0092
102	Swivel Arm Support	0380 0093
103	Bearing Bushing	0380 0123
104	Ball Bearing DIN 625 6000	2400 0017
105	Spacer Bushing	0380 0128
106	Chain Wheel	0380 0585
107	Sprocket	0380 0578
108	Spur Gear	0380 0120
109	Tooth Lock Washer	0380 0119
110	Shaft	0380 0576
111	Cam Shaft	0380 0582
112	Switch Cam	0380 0117a
113	Switch Cam	0380 0117b
114	Shoulder Bolt	0380 0114
115	Switch	0006 0184
116	Insulating Plate	0006 0257a
117	Motor Drive Assembly	0380 0570
118	Tube Shield Holder	0380 2150
119	Cover	0380 2165
120	Tube Carriage	0380 0141
121	Pulley	0380 0136
122		
123	Fastening Plate	0380 0334
124	Adjusting Plate	0380 0335
125	Operating Console	0380 2200
126	Toggle Switch	0006 0182a
127	Toggle Switch	0006 0182b
128	Toggle Switch	0006 0182c
129		
130		
131		
132		
133		
134		
135		
136		
137		
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139		
140	Bucky Carriage	0380 0174
141	Pulley	0380 0136
142	Adjusting Nut	0380 0226
143	Intermediate Disc	0380 0225

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REF-No.	Name	Part-No
144	Brake Disc	0380 0224
144b	Brake Disc set	0386 0364
145	Steel Ball DIN 5401 7/32"	2900 0003
146	Bearing Disc	0380 0221
147	Mounting Bracket	0380 0222
148	Shoulder Bolt	0380 0220
149	Connector	0380 0312
150	Brake Shoe	0380 0237
151	Brake Shoe with Spring	0380 0239
152	Shim	0380 0242
153	Handle	0380 0305b
153a	Ball Handle	0380 0305a
154	Lid	0380 0313
155	Trim Cover (EUROPA)	0380 0235
155a	Trim Cover (USA)	0380 1033
156	Catch	0380 0228
157		
158	Sleeve	0380 0307
159	Washer	0389 0268
160		
161	Bucky Support (Phi, LF,ES)	0380 1610a
162	Fastening Plate	0352 1620
163	Fastening Plate	0380 1621
163a	Cover	0380 1622
164		
165	T-Slotted Rail	0370 0746
165a	T-Slotted Rail (Phi)	0352 0469
166	Frame	0370 0704
167	Bucky Cover Plate	0370 0718
167a	Bucky Cover Plate (Phi)	0370 0715
168	Weight 0.5 kg	0380 0332
169	Weight 7 kg	0380 0331a
169a	Weight 3 kg	0380 0331b
170		
171	Terminal Strip	0006 0617a
172	Ground Stud	0006 0525
173	Rail for Terminal Strip	0110 0313a
174		
175	Angle	0380 1017a
176	Angle	0380 1017b
177	Weight	0380 0280a
178	Plate	0380 1015

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4.5 Maintenance Certificate

The maintenance according to the attached maintenance instructions has been carried out. Any parts replaced were original spare parts as shown on the list.

Replaced parts (List Pos. no. only)

Date Name of company Signature

Replaced parts (List Pos. no. only)

Date Name of company Signature

Replaced parts (List Pos. no. only)

Date Name of company Signature

Replaced parts (List Pos. no. only)

Date Name of company Signature

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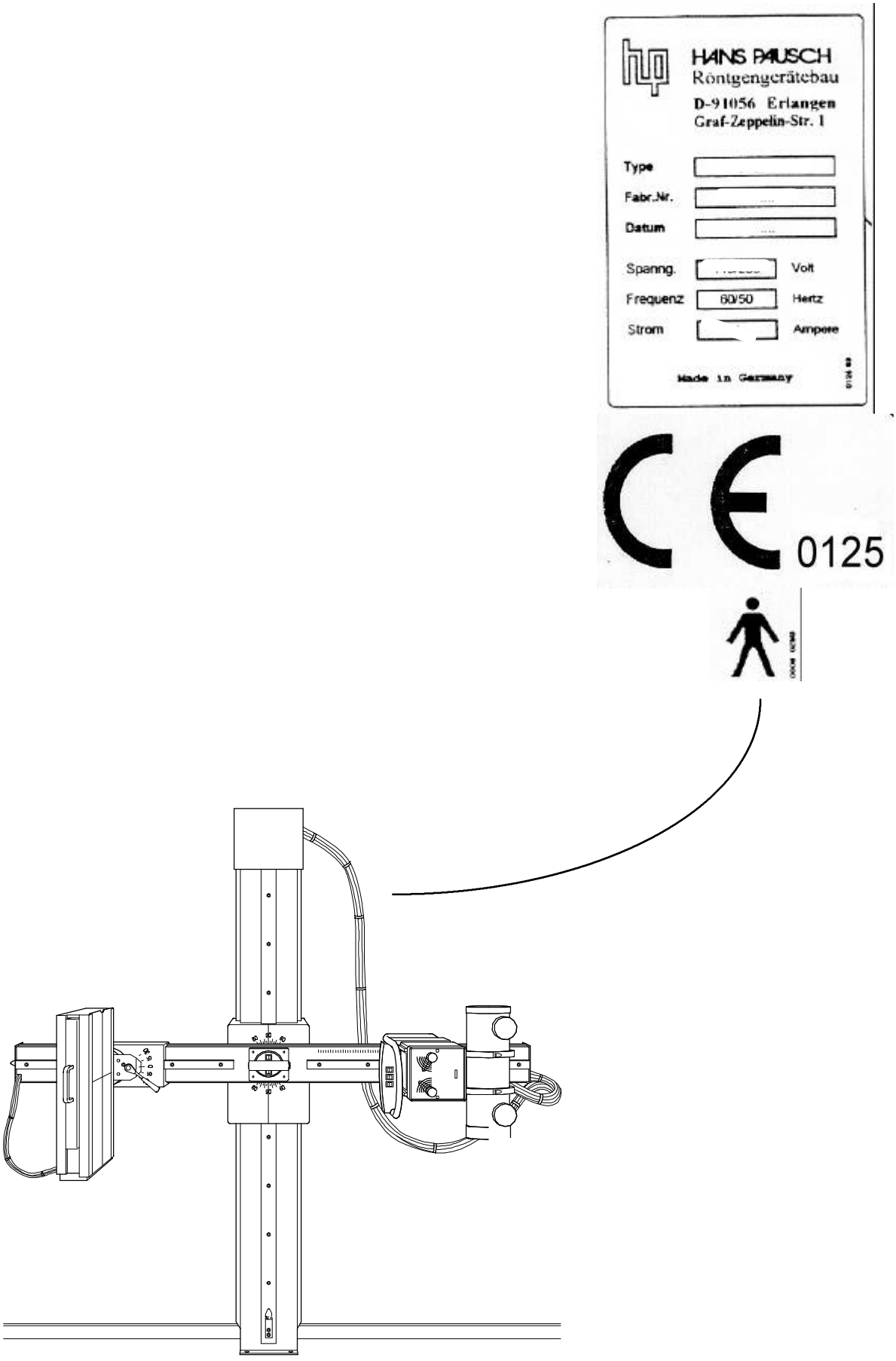
4.6 Name Plate Location



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Subject to technical alterations TV/Ru

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